

ARIZONA JUDICIAL BRANCH

ENTERPRISE ARCHITECTURE STANDARDS

Purpose

The primary purpose of Information Technology (IT) is to enhance and support business and administrative requirements and processes within the courts. Enterprise Architecture (EA) provides a comprehensive framework of business principles, practices, and technical standards that direct the design, construction, deployment, and management of information technology for the courts. EA functions as a “building code” that facilitates the application of IT to business initiatives and objectives leading to change in an orderly, efficient, and cost-effective manner by describing a direction for current and future activities, supported by underlying principles, standards, and best practices.

Adopting an IT architecture, although intuitively a positive organizational direction, is often difficult. Standards are many times perceived as being set at the expense of freedom. However, today’s fast-paced technology demands and small funding amounts make architecture a strategic necessity. A mature IT enterprise must have the discipline to adopt and follow a consistent set of strategies, reference models, and exchange capabilities.

- Per Gartner, the strategic goal of enterprise architecture is to position the [entity] to leverage technology in support of the business strategy and make technology the proactive enabler of an agile, responsive enterprise that can react in real time to changes in the marketplace, and take advantage of new business opportunities.
- Enterprise architecture will provide standardization and elimination of redundancy and complexity across the Arizona Judicial Branch.
- The cross-jurisdictional nature of criminal justice activities supports adopting common architectures to facilitate integration.
- The Judicial Branch should avoid being what Gartner Group describes as a “typical unarchitected e-government” where “multiple sets of customer channels, interfaces and systems are independently developed ... and require duplicative infrastructure and forced disparate access experiences for constituents.”
- There is a lower cost to buy and support a limited set of products and standards; the judiciary can leverage both volume discount buying and maintain a less complex environment.
- Non-standard products and applications create a challenge to support and yield security concerns.

Scope

The table below contains the adopted Enterprise Architecture for the Arizona Judicial Branch. The standards, protocols and products listed are prescribed for core, leveraged (enterprise) activities and applications among the courts statewide. Where there are unique, local undertakings that cannot be leveraged, a court is free to go beyond the standards set here. When sharable modules related to core applications are developed, the standards must be followed.

The “Distributed Component (Bolt-on) Module” (available at <http://www.supreme.state.az.us/cot/Documents/EAS/EAS.htm>) documents the approaches to development of local, leveraged, and core standardized (enterprise) modules. To be sharable, supported in the statewide framework or part of core standardized (enterprise) applications, modules must be developed to the Enterprise Architecture Standards of the Arizona Judicial Branch.

Definitions/Implications

Definitions	Implications
Baseline – Listing of products and services typically in use today within the court system.	Provides context to aid reader in understanding the layer or scope being specified by the row in the table.
Retirement – Obsolete product or technology being targeted for de-installation.	No new use allowed without exception being granted by COT. Necessitates specific strategy in next IT Strategic Plan for removal/replacement within plan period.
Containment – Use of product or technology limited to maintenance and current commitments only.	No additional use allowed without exception being granted by COT, except enhancement or expansion of a current implementation. The next stop on the lifecycle is retirement; therefore, further investment is unwise and serves to make removal/replacement more difficult and expensive.
Mainstream – The current standard for any new systems or migrations from legacy systems.	The primary option when adopting a new technology or selecting a new product. Any other choice requires that an exception be granted by COT.
Scope of Standard – Elaborates on the degree or range of application of the mainstream item.	Distinctions may be made by function, court size, or jurisdiction, for example.
Watchlist – Emerging technologies products or releases being considered for adoption but not yet formally adopted.	Included for court reference, these items may be dropped or moved to mainstream in the next revision of the table as more becomes known about them. Courts should proceed cautiously in this area, using a pilot approach to implementation.
Comments – Any related information not fitting within the other columns.	
Exception – A formal agreement to enable the court to pursue a non-mainstream direction or install a non-standard product.	Requires use of the exception request document available at http://www.supreme.state.az.us/cot/documents and submittal to TAC for recommendation to COT for a formal motion. Exceptions are granted only to the court requesting the exception – further development or use outside that court requires a further exception.

Updates

A bi-annual review of these standards by the Technical Advisory Council is recommended. Local or state automation projects requiring exceptions can initiate a review of selected items at any time.

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Adopted by Administrative Order 2004-0018 Last revised: ~~6/6/2008~~ 9/2010

Architecture Layers	Baseline (currently in use)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
Applications & Tools							
User Interface Delivery Method for Public Access	Browser-based	Netscape		Browser-based	For Microsoft Internet Explorer	Firefox, <u>Google Chrome</u>	
User Interface Delivery Method for Business Applications	Browser-based (asp), Windows forms	Character based		Browser-based (asp or asp.net), Windows forms		XAML <u>Silverlight</u>	
Electronic Document Management	Hyland OnBase, LaserFiche, SIRE	LaserFiche		Hyland OnBase <u>9.2</u>			
Document Imaging	Kofax; OnBase Scanning Module		<u>Kofax</u>	Kofax , OnBase Scanning Module			
Report Writer for Ad Hoc Reporting	Crystal Enterprise, Crystal 5-11	Crystal <10, <u>MS SQL Server Reporting Services 2000</u>	Crystal \leq 10, <u>MS SQL Server Reporting Services 2005</u>	Crystal \geq 10, MS SQL Server Reporting Services <u>2008</u>			
Report Writer for Business Application Reports	Varies: Crystal, native application report writers, "hard coded" reports.	Crystal <10	Crystal \leq 10; <u>MS SQL Server Reporting Services 2005</u>	Crystal \geq 10, MS SQL Server Reporting <u>Services 2008</u>			
Data, Research, and Analysis Tools	SPSS SAS			SPSS SAS		MS Analysis Services	

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Development Languages	.ASP, .NET Traditional 3GL, MUMPS, JAM, RPG, VB6, FoxPro	COBOL, JAM, RPG, <u>MUMPS</u> , <u>FoxPro</u>	Java (on a business case need basis), ASP (Classic), .NET Framework V1.1	AJAX (streaming .asp), .NET Framework <u>2.X</u> and <u>23.0X</u> , VB.NET, ASP.NET, C#.NET (on a business case need basis)		.NET Framework V3 V4.0X , XAML (eXtensible Application Markup Language) <u>Silver-</u> <u>light</u>	
Development Environment	Visual Interdev, Visual Studio, PowerBuilder, Panther, MS- Access	Panther, Visual Studio ≤2003, Visual Studio 6	Visual Interdev, Visual Studio 2005, PowerBuilder, <u>MS-</u> <u>Access</u>	Visual Studio 2008		Visual Studio 2009 <u>2010</u>	
Source Control	PVCS, Visual Source Safe, CCC Harvest (Phx.), Aldon (JOLTS), SCCS (DW), <u>Team Foundation</u> <u>Server</u>	<u>Aldon</u>		Must use source control	All developed systems		Will consider a process to meet these requirements, and not a specified tool.
Analysis Tools	HOW, Visio, Visible Analyst , BPEL, Erwin, BPWin, Rational	HOW		UML, BPEL			Switching from products to standards.
Code Generation	PowerBuilder, Visible Developer, Alachisoft TierDeveloper						

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Office/Personal Productivity Tools							
Word Processing	Word Perfect, Word	Word Perfect, Word 97 Word < 2003	<u>Word 2003</u>	Word <u>2007</u>		OpenDOC technology	
Spreadsheet	Quattro Pro, Excel	Excel <2003, <u>Quattro Pro</u>	Excel 2003	Excel 2007			
Presentation	CorelDraw, PowerPoint	PowerPoint <2003, <u>CorelDraw</u>	PowerPoint 2003	PowerPoint 2007			
<u>Local Standalone Database,</u>	<u>MS-Access</u>			<u>MS-Access</u>	<u>Non-Production use only</u>		
E-mail Client Product	Outlook, Groupwise, Lotus Notes	Outlook <2003, <u>Lotus Notes,</u> <u>Groupwise</u> <u>(unsupported</u> <u>versions)</u>	Outlook 2003 , <u>Lotus</u> <u>Notes, Groupwise</u> <u>(supported versions)</u>	Outlook 2007		Thunderbird	
Instant Messaging	Yahoo Messenger, MS- Messenger, AIM, IRC Chat, Trillian, <u>Sametime</u>	IRC Chat		Live Communication Server			IRC Chat is a security risk due to peer networking
Collaboration	Exchange 2003+ Outlook, MS- Office 2003 , Office Live, Webex, <u>Google</u> <u>Apps</u>			SharePoint Services, Live Communi- cation Server, Webex, <u>Google</u> <u>Apps</u>		<u>Google Wave</u>	
Distance Learning	Centra			<u>Centra, Granicus</u>			

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Data Architecture							
DBMS	Informix, DB2/UDB, SQL Server, MySQL, <u>Clipper</u> , MS- Access , FoxPro	Informix, Advanced Revelation, DBASE, SQL Server <2000 2005, <u>FoxPro, Clipper</u>	SQL Server 2000 2005, FoxPro, <u>Clipper</u>	SQL Server 2005, <u>SQL Server 2008</u> MSDE/SQLServer Express, MySQL	Court core business applications (on a business case need basis)	SQL Server 2008 <u>SP2</u>	Black box DBMS not incl. MS Access for personal productivity use only.
Data Warehouse DBMS	Informix XPS		<u>Informix XPS</u>	Informix XPSSQL <u>Server 2008</u>		Informix 11, DB2 UDB Warehouse, SQL Server 2005/2008, <u>Smart Data Layer</u>	Selecting future direction.
DBMS Modeling Tools	PowerDesigner, Erwin, Visio			UML 2.0 <u>compliant</u>			Tools must be capable of creating alter scripts to update database schemas.
Data Exchange Model	JXDD 3.0.0.1, Fixed format, XML homegrown, <u>Electronic Court Filing</u>		Fixed format, XML homegrown	GJXDM V3.0.3, NIEM, <u>ECF 4.X</u>	Between autonomous systems	OASIS	In conjunction with the Arizona Criminal Justice Commission's Arizona Data Dictionary. XML standard at http://it.ojp.gov/ jxdd

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Image-Scanning Format	Tagged Image File Format (TIF), Portable Document Format (PDF)			Tagged Image File Format (TIF), Portable Document Format (PDF)		Searchable PDF	
Audio File Format	Proprietary formats, .WAV			Uncompressed .WAV format	<u>For interchange with other courts and archive</u>		Industry- standard output must be playable by non-proprietary readers.
Video File Format/ Protocol	Proprietary formats, AVI			H.323 protocol AVI, NTSC	Transmission Storage	SIP	Max 384 kbps/ concurrent session transmitted over AJIN.
Email Protocol	SMTP, MIME			SMTP and MIME		S/MIME	
Data Transmission Encryption	Triple Data Encryption Standard (Triple DES)			Triple Data Encryption Standard (Triple DES), DPS FIPS 11	Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records	AES (advanced encryption standard)	For data encryption over public networks
Stored Data Encryption				<u>Back up data on mobile devices to court servers before encrypting</u>	<u>Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records</u>	<u>Credant and GuardianEdge (being tested in Maricopa Superior Court)</u>	Subject to legislative direction <u>pilot test results</u>

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E-mail Encryption				<u>S/MIME</u>	<u>Transport only; not storage</u>		Will be considered in FY09
Networks and Platforms							
Network Protocol	Transmission Control Protocol/ /Internet Protocol (TCP/IP), SNA	SNA		TCP/IP, IPSec			
Wireless Network Access	802.1X , WEP, WTLS, <u>PEAP</u> , <u>WPA2</u>	WEP		802.1X <u>PEAP</u> , <u>WPA2</u>		WiMAX	
Network Operating System	MS-Windows, Novell NetWare	Novell (unsupported) Windows (unsupported)	<u>MS-Windows Server 2003</u>	MS-Windows Server 2003 2008	For gaining access to any enterprise system	LINUX , Windows Server 2008 <u>next release</u>	
Client Operating System	Varies; primarily Windows 2000, and XP, and Vista	≤ Windows 2000	Windows XP	Microsoft Windows Vista, <u>Windows 7</u>	Current supported version only – previous versions are contained or retired		
Server Operating Systems	Microsoft Windows, UNIX, OS/400, DEC VMS	OS/400, <u>DEC VMS</u>	DEC VMS Microsoft <u>Windows 2003</u>	Microsoft Windows 2003 2008, UNIX (latest version), <u>Linux</u>	Enterprise applications	Linux , Windows Server 2008 <u>next version</u>	
Shared Services							

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Component Service Layer	DCOM, ASP, SOAP, MS- Windows Communication Foundation (WCF)		Web Services V1.1(current version) , DCOM, ASP (classic)	Web Services V2.0(next version) , SOAP Objects, Remoting, MS- Windows Communication Foundation (WCF)		MS- Windows Communication Foundation (WCF)	
Directory Services	Active Directory, Novell eDirectory (NDS), LDAP			Active Directory LDAP	Within Branch Outside Branch		
Electronic Signatures	/s/ with internal, two-factor authentication; signature pad; biometrics			MS Office Digital Signature, Adobe Digital ID	Self certification within court network	PKI, signature pad, biometrics, eSeal	Requires court policy changes accompanying e-filing.
Identity-Login Authentication	UserID/Password, Biometrics			UserID/Password, Biometrics		SmartCards Biometrics	
Remote Access through Internet (by employees or trusted partners)	VPN with IPSec, VPN with proprietary encryption, SSL3DES			VPN with IPSec, SSL3DES		http portals	
Message Transport Middleware							
Message Transport	MQ	MQ ≤V5.2	MQ V5.3	MQ V6.0		MQ V7.0	
Data Transformation	MQSI, Data Junction, Cloverleaf, BizTalk	Data Junction , MQSI ≤V2.1	Data Junction , Cloverleaf	WMB V6.0, BizTalk	At the state level; not required at the local level.	BizTalk WMB V7.0	

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Data Routing/Publish and Subscribe	MQSI; Cloverleaf; <u>BizTalk</u>	MQSI ≤V2.1	Cloverleaf	WMB V6.0; <u>BizTalk</u>	At the state level; not required at the local level.	BizTalk <u>WMB</u> <u>V7.0</u>	
File Transfer; <u>Scheduled Production</u>	FTP, HTTP, MQ	FTP (intercourt and using public Internet), MQ ≤5.2	FTP (intracourt only), MQ V5.3	MQ V6.0, <u>Web</u> <u>Services</u>	Scheduled production transfers of data using private networks	<u>MQ V7.0</u>	<u>Overall</u> <u>direction is</u> <u>toward MQ</u> <u>exclusively</u>
<u>File Transfer, Ad Hoc</u>	<u>FTP, HTTP, MQ</u>	<u>FTP, MQ ≤5.2</u>	<u>FTP, MQ V5.3</u>	<u>MQ V6.0</u>	<u>Unscheduled bulk</u> <u>transfers of data</u>	<u>MQ V7.0</u>	<u>Overall</u> <u>direction is</u> <u>toward MQ</u> <u>exclusively</u>
Jury Business Applications							
Jury Management	<u>Jury+, Juror for</u> <u>Windows</u>			Jury+ (see ACJA 1- 501)			

Exceptions

Exception Process Evaluation Principles (detailed in *Enterprise Architecture Standards Exception Request Document* at http://www.supreme.state.az.us/cot/Documents/Technology/EAS_Exception.doc):

1. City/County investment has already been made (apart from the court) that reduces the cost to the court.
2. Overall cost (total cost of ownership) is reduced from that of implementing the statewide standard. This savings must be balanced against the potential impacts to the broader Branch initiatives. Specific areas to be considered are: financial leverage, integration, support, and training.
3. Overall risk is reduced from that of implementing the statewide standard.
4. The local IT function is/will be providing support.
5. The technology demonstrates long-term viability. This must include the consideration of the vendor's viability and future costs to evolve the technology solution.
6. Substantially greater productivity is enabled through adoption of a local standard.

In addition, the court requesting an exception agrees to bear any later costs at the local level necessary to integrate the exception component or system with a statewide standard component or core system.

Arizona Code of Judicial Administration 1-505 adopts this document. It references this document, as maintained and published on the Commission on Technology Web site, as the Arizona Judicial Branch Enterprise Architecture Standards.